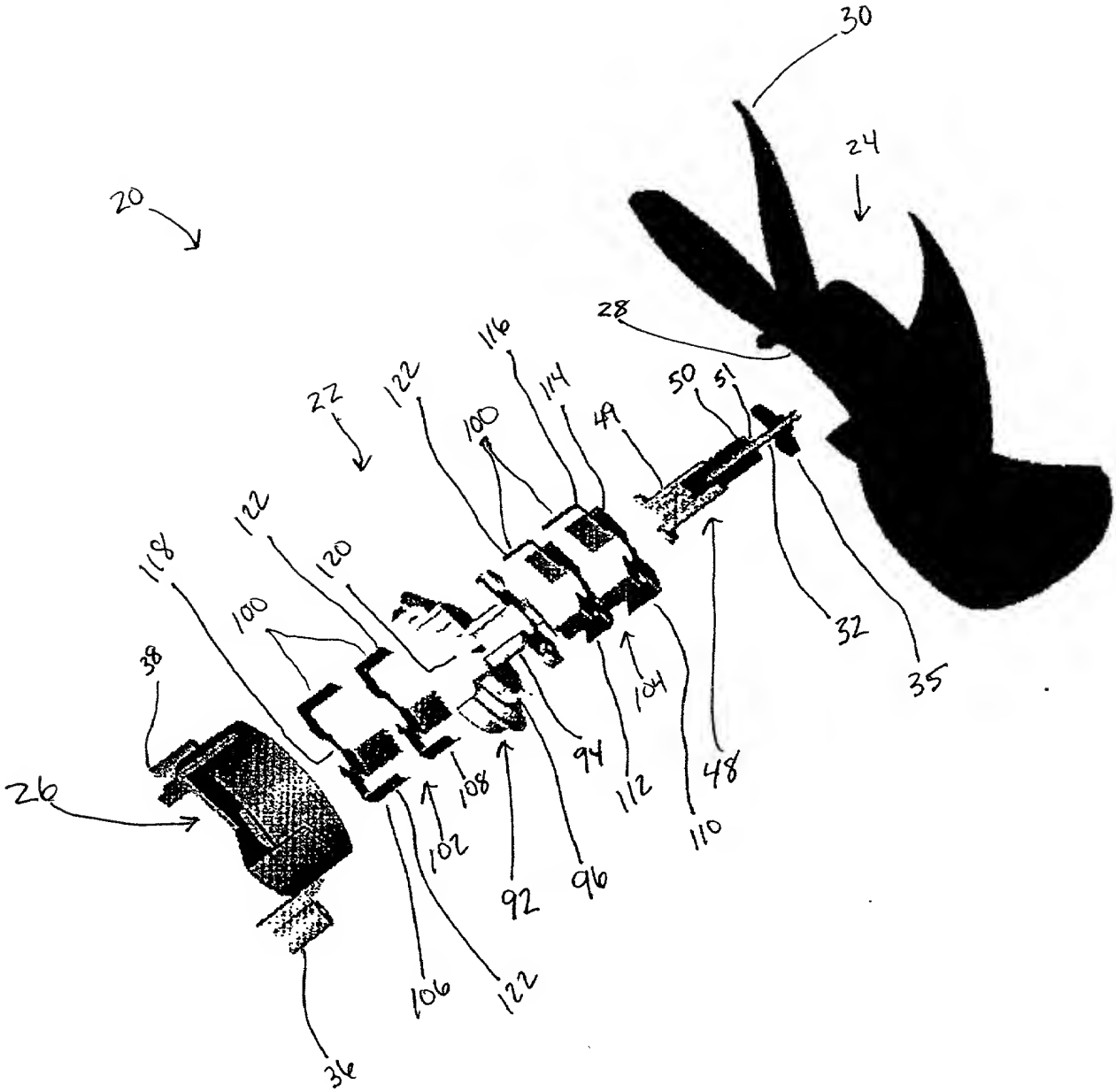

30
24
20
28
116
114
50
51
22
122
100
49
122
118
120
100
38
32
35
104
94
48
112
110
108
102
92
96
26
106
122
36

FIG. 1

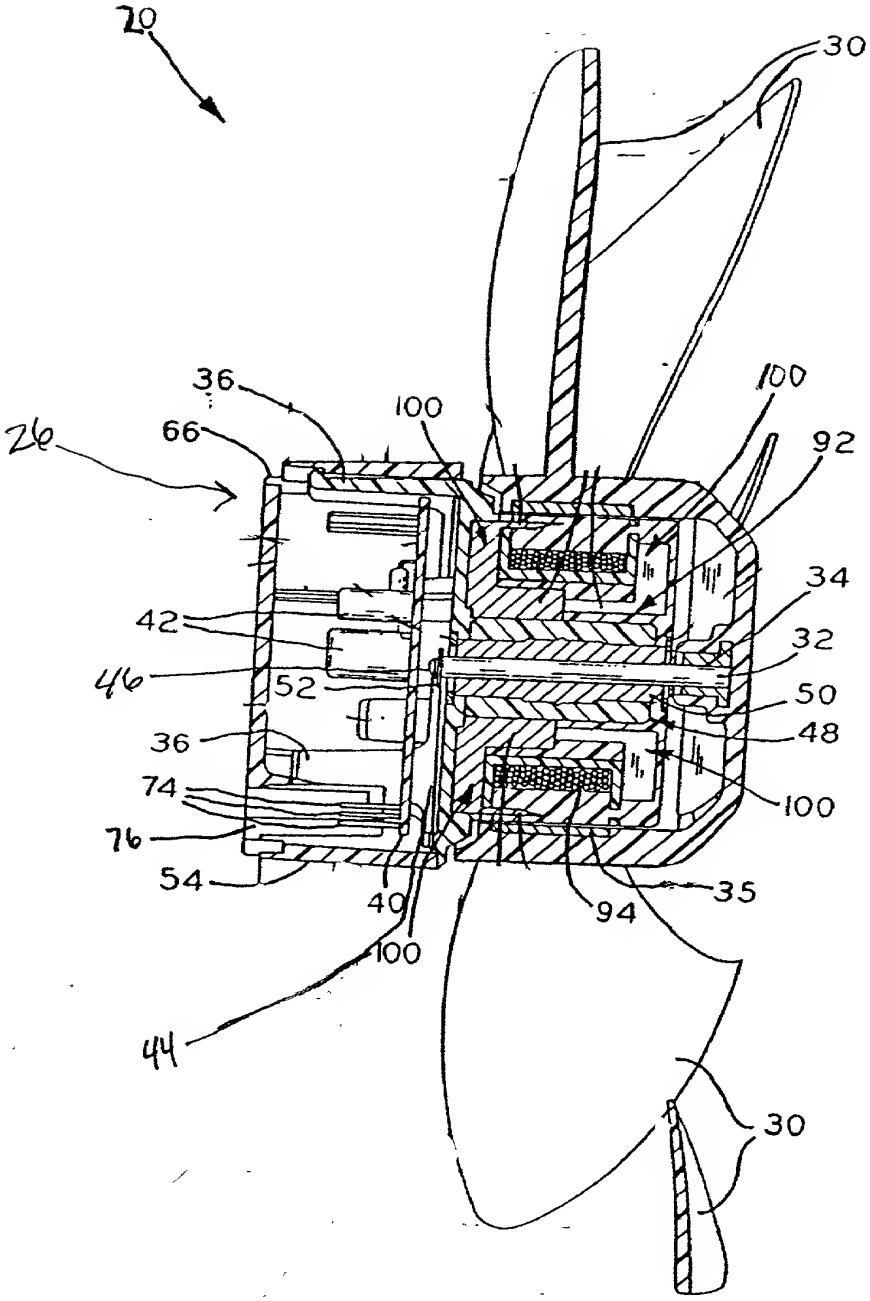

20
30
36
100
66
26
100
92
34
42
32
46
52
50
36
48
74
100
76
54
40
94
35
100
44
30

FIG. 2

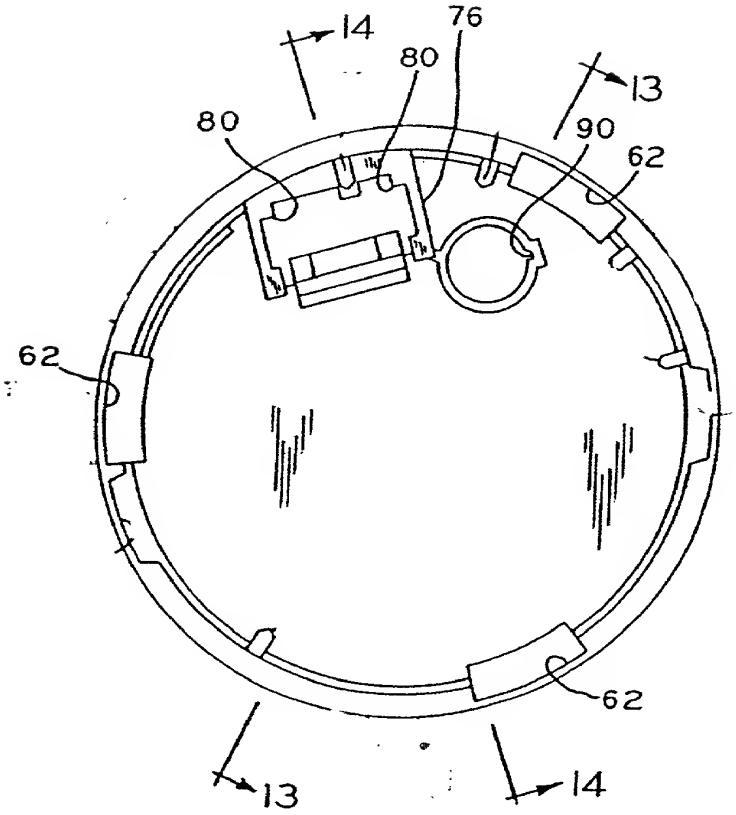


FIG. 3

Substitute Sheet (Rule 26)

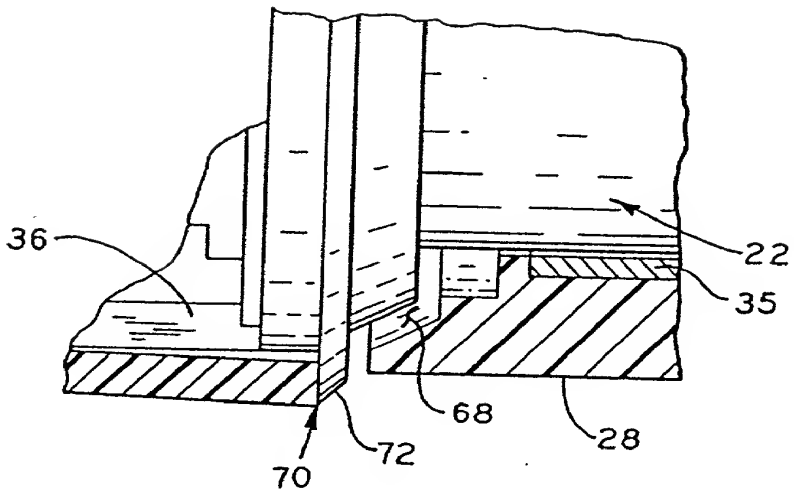


FIG. 4

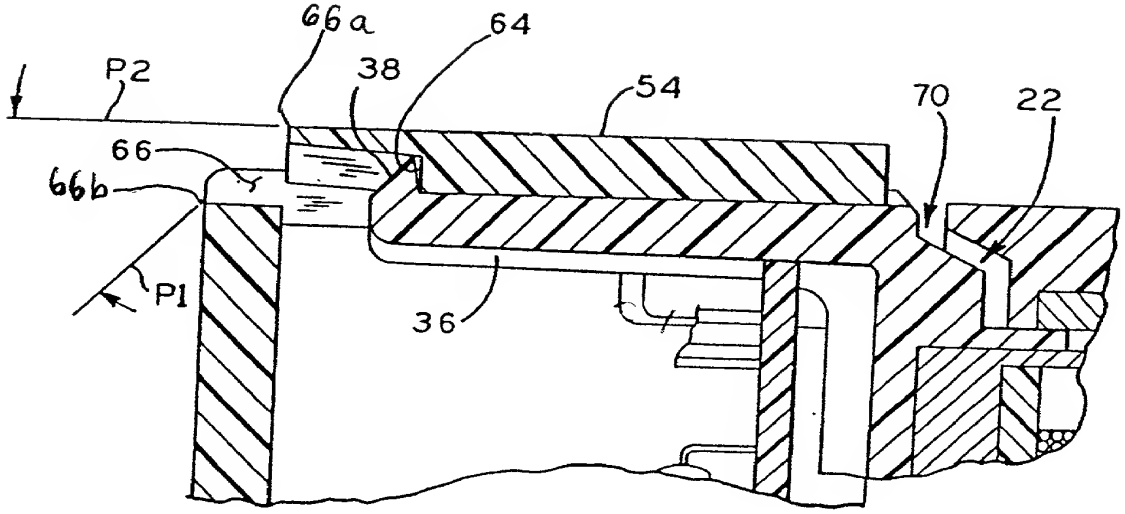


FIG. 5

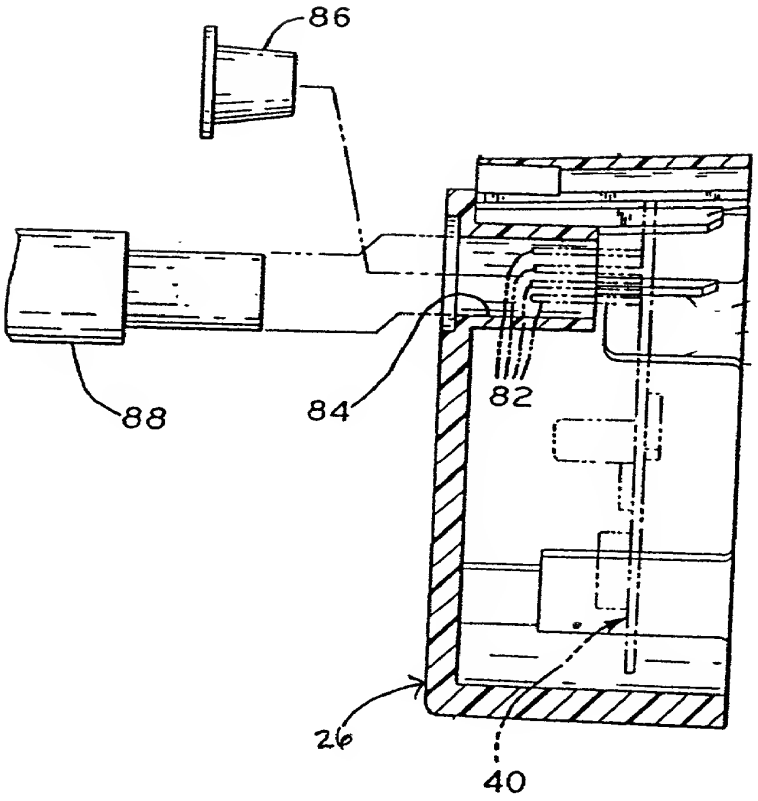


FIG. 6

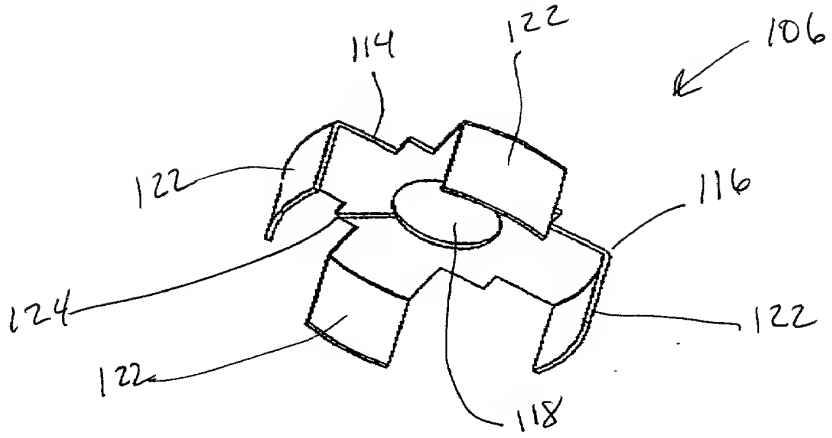

114
122
106
122
116
124
122
122
118

FIG. 7

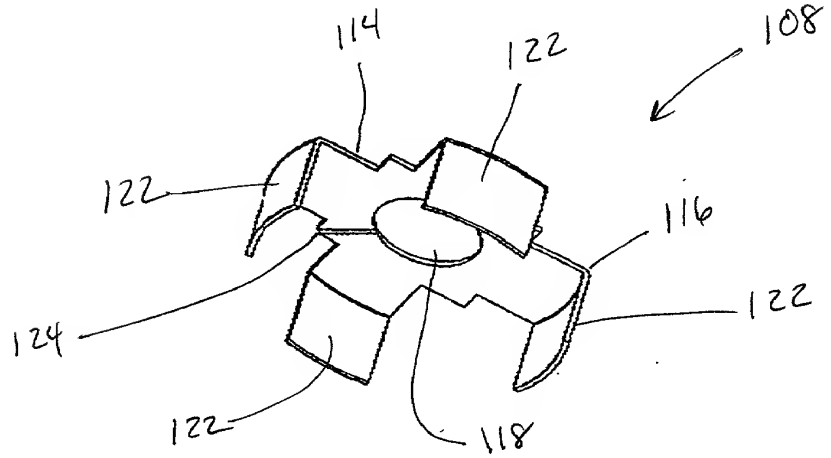

114
122
108
122
116
124
122
122
118

FIG. 8

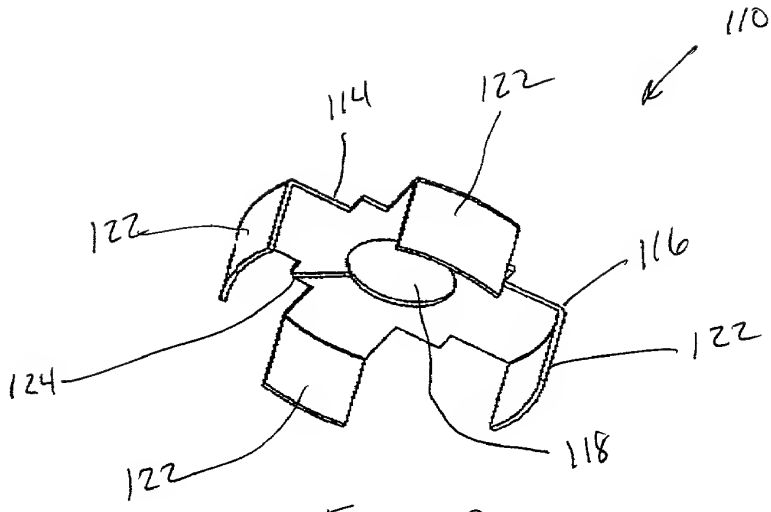

110
114
122
122
116
122
124
122
118

FIG. 9

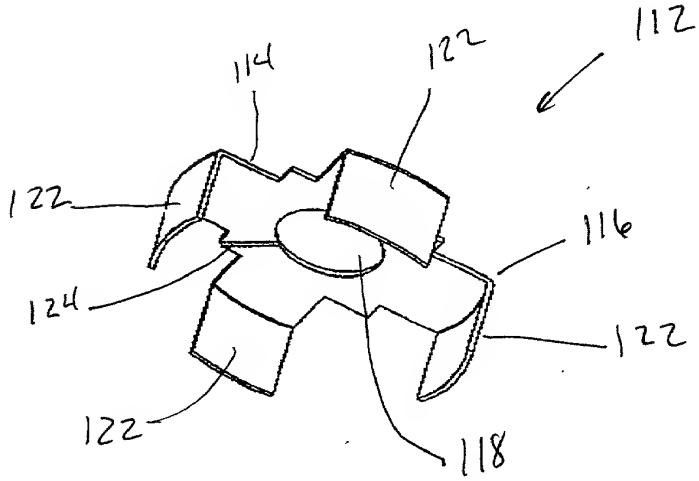

112
114
122
122
116
124
122
122
118

FIG. 10

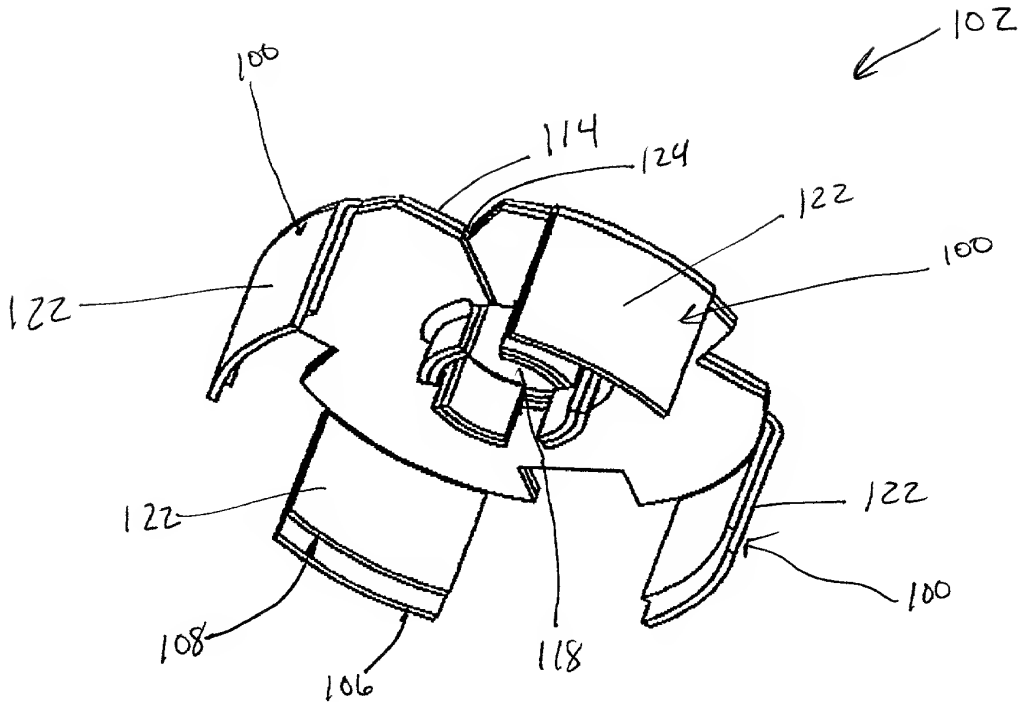

102
100
114
124
122
100
122
122
122
100
108
106
118

FIG. 11

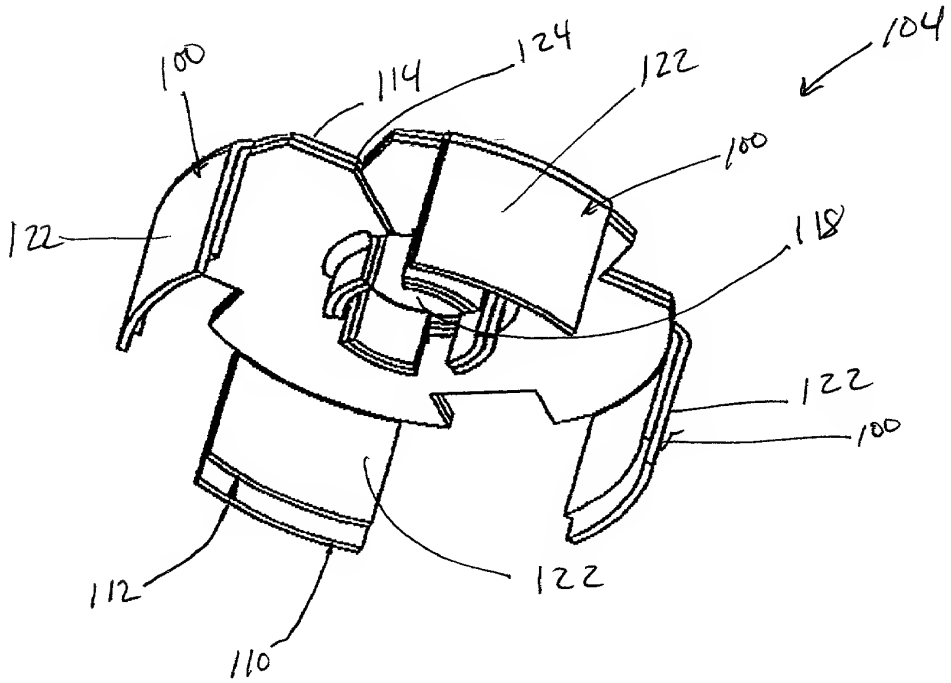

104
100
114
124
122
100
122
118
122
100
112
110
122

FIG 12

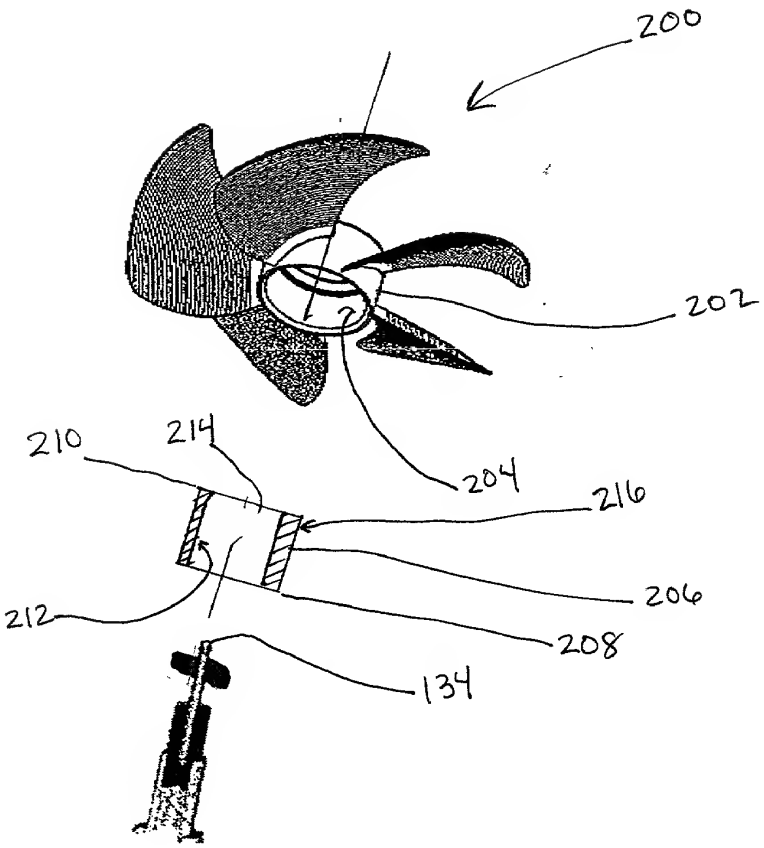


FIG. 13

PCT/US2005/035760

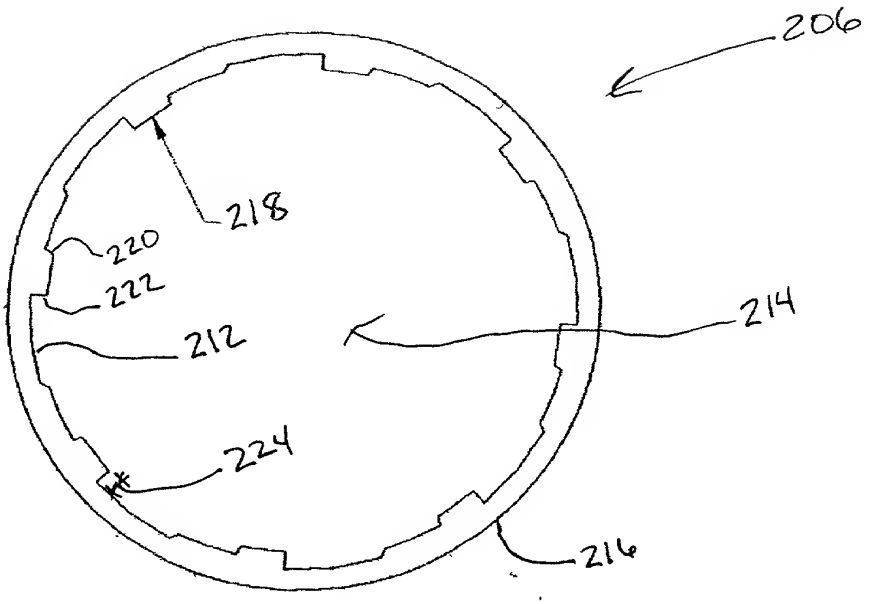


FIG. 14

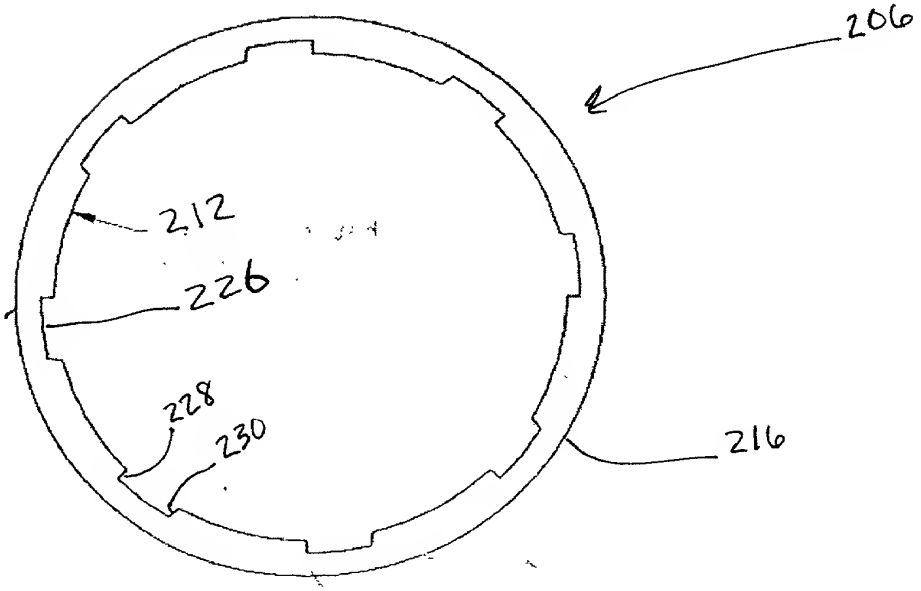


FIG. 15

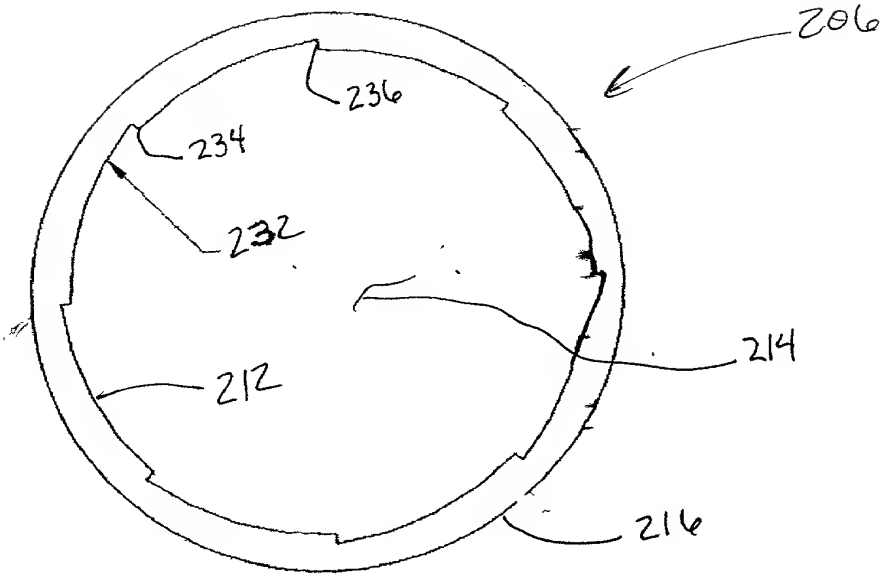


FIG. 16

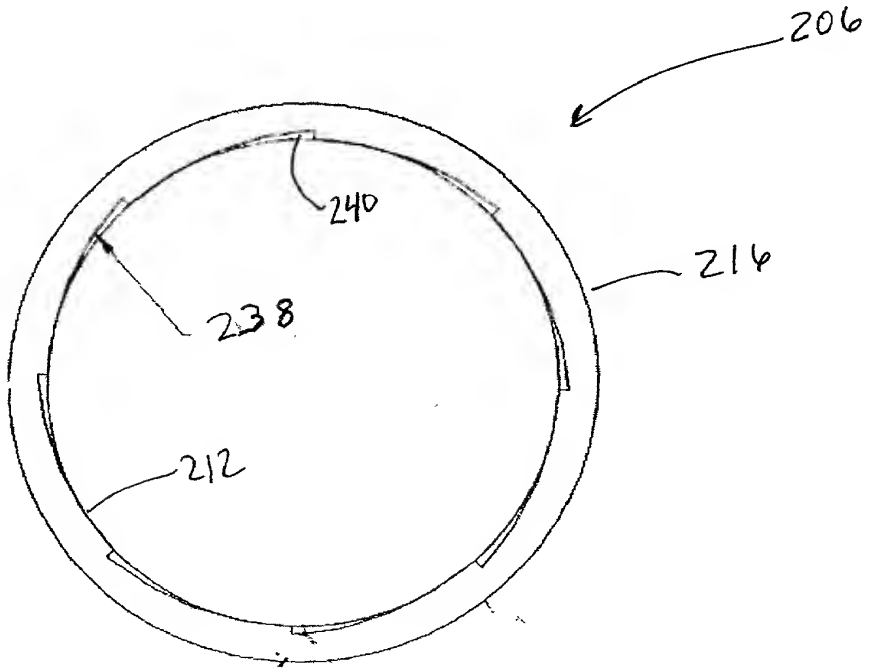


FIG. 17

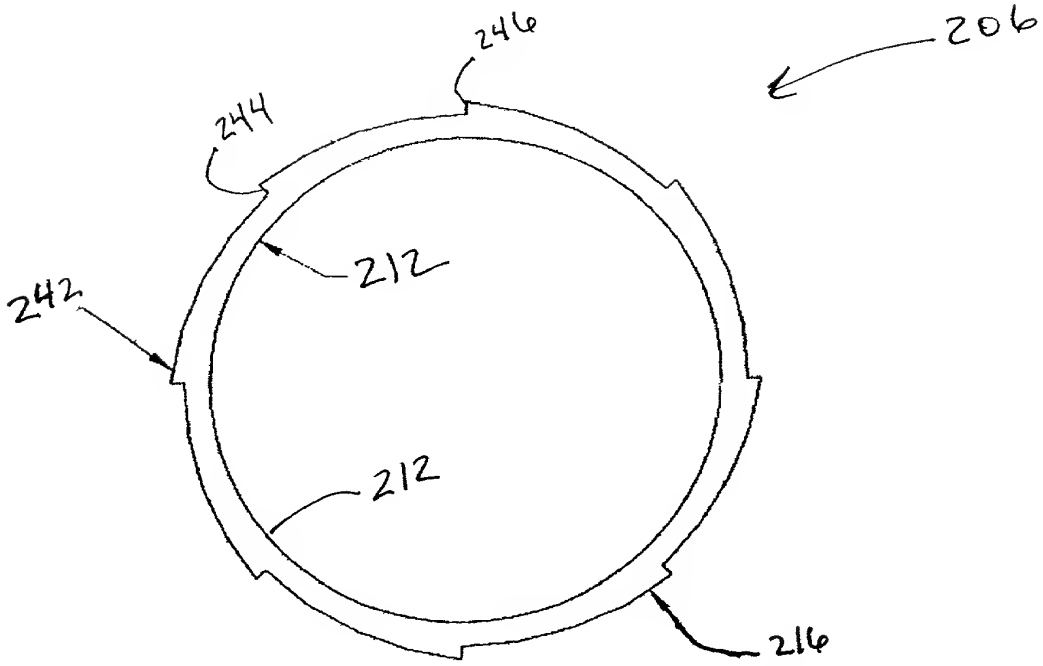


FIG 18

10600P-3257/0600

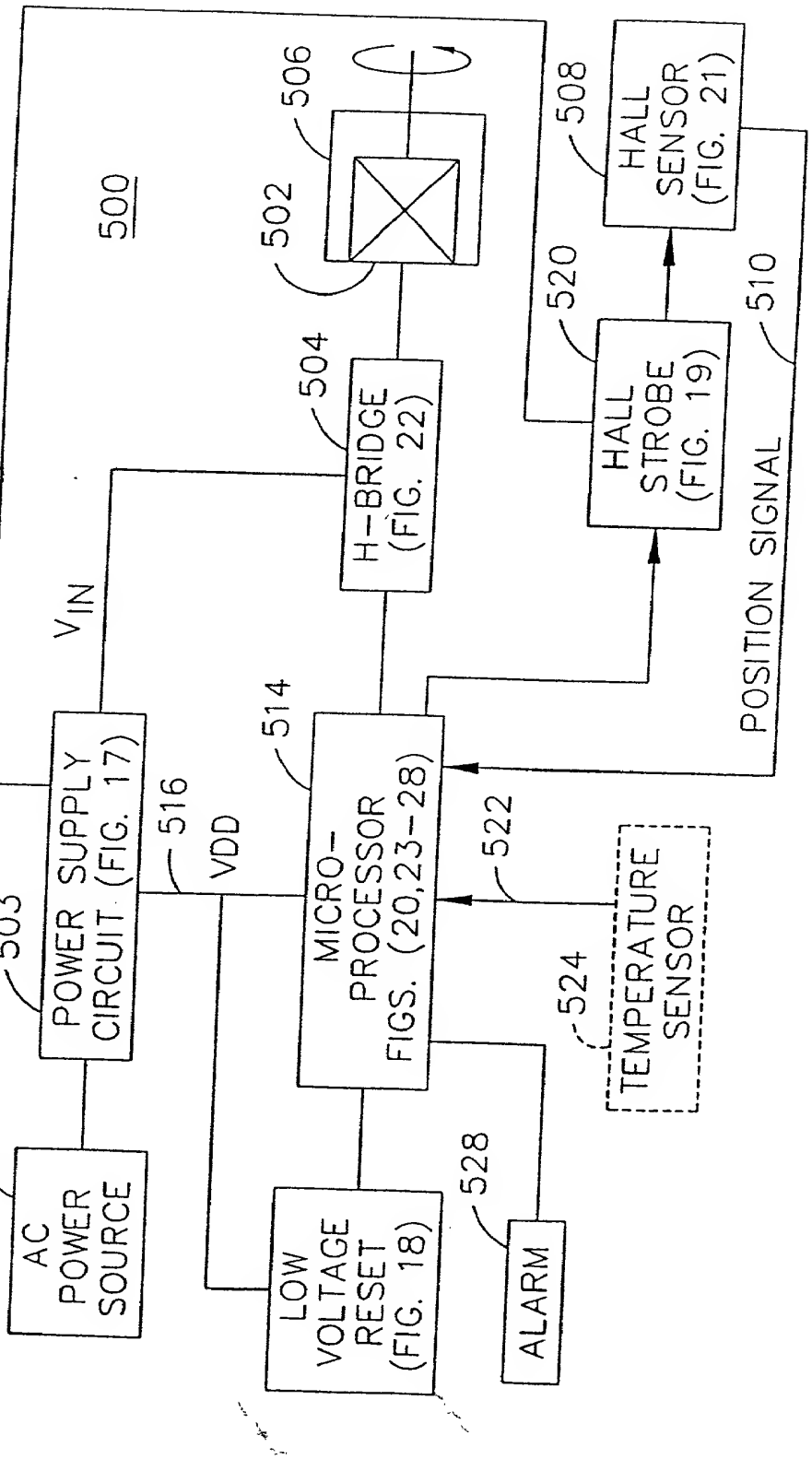

512
500
506
502
508
HALL SENSOR (FIG. 21)
504
H-BRIDGE (FIG. 22)
520
HALL STROBE (FIG. 19)
510
POSITION SIGNAL
V_{IN}
514
503
POWER SUPPLY CIRCUIT (FIG. 17)
516
VDD
MICRO-PROCESSOR FIGS. (20,23-28)
522
TEMPERATURE SENSOR
524
501
AC POWER SOURCE
LOW VOLTAGE RESET (FIG. 18)
528
ALARM

FIG. 19

T06007"225i2660

503

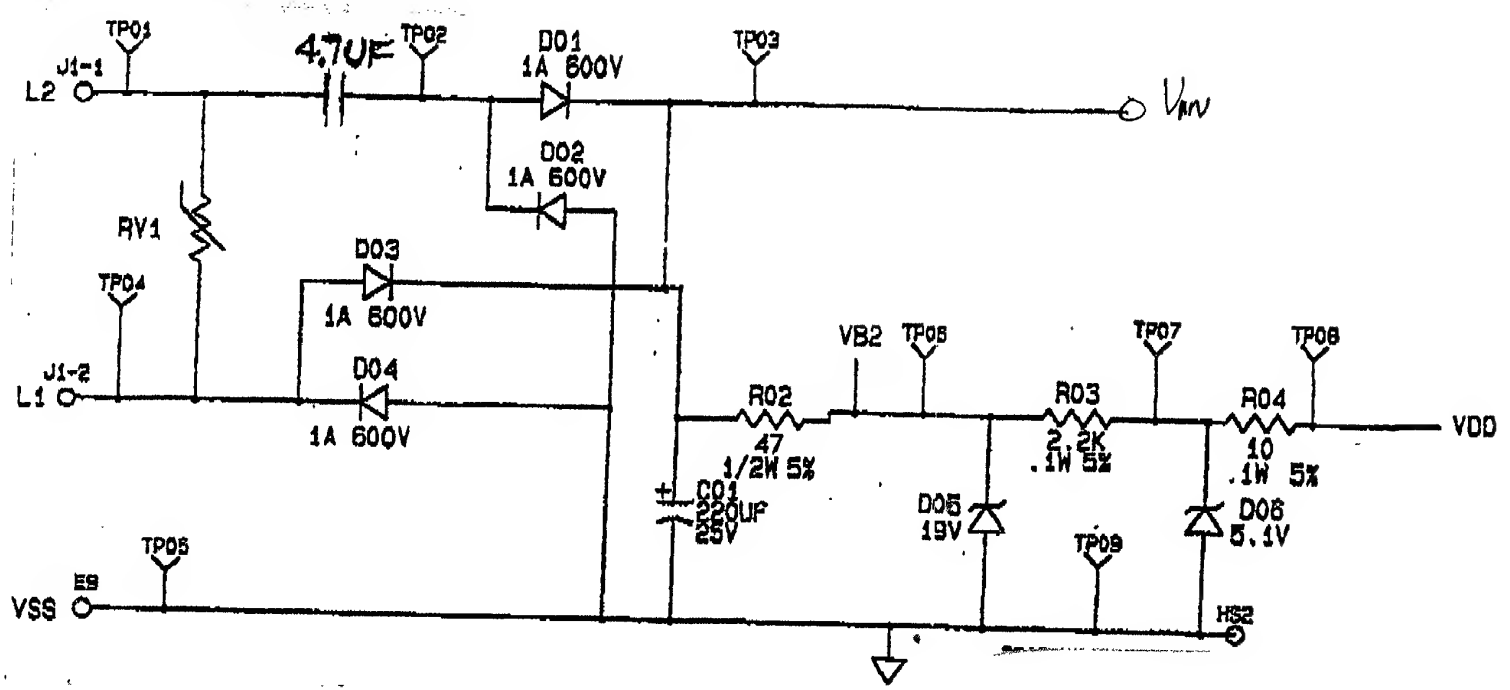


FIG. 20

15/18

FIG. 21

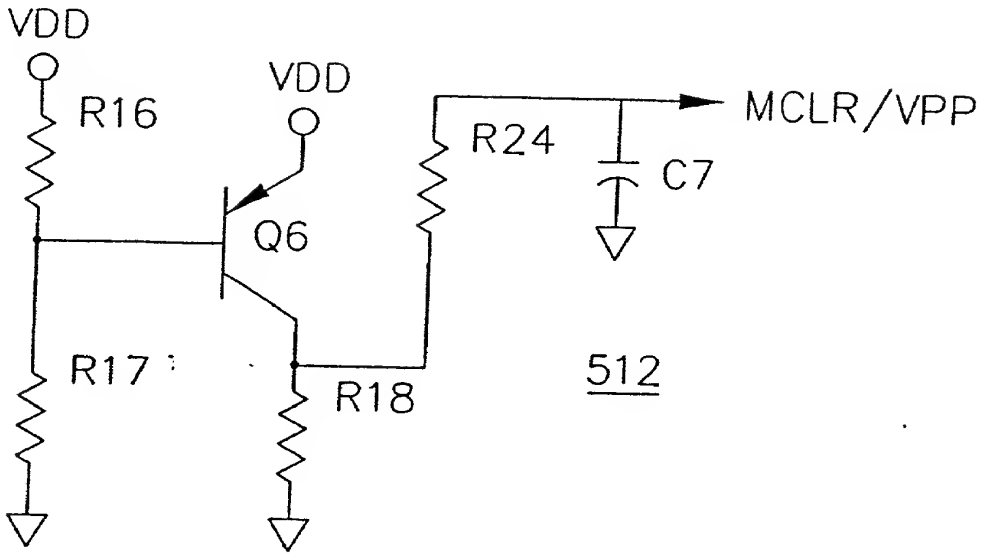


FIG. 22

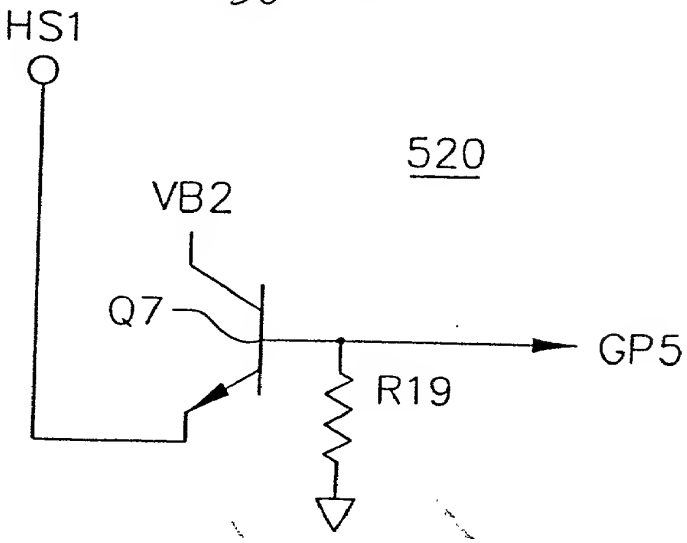


FIG. 23

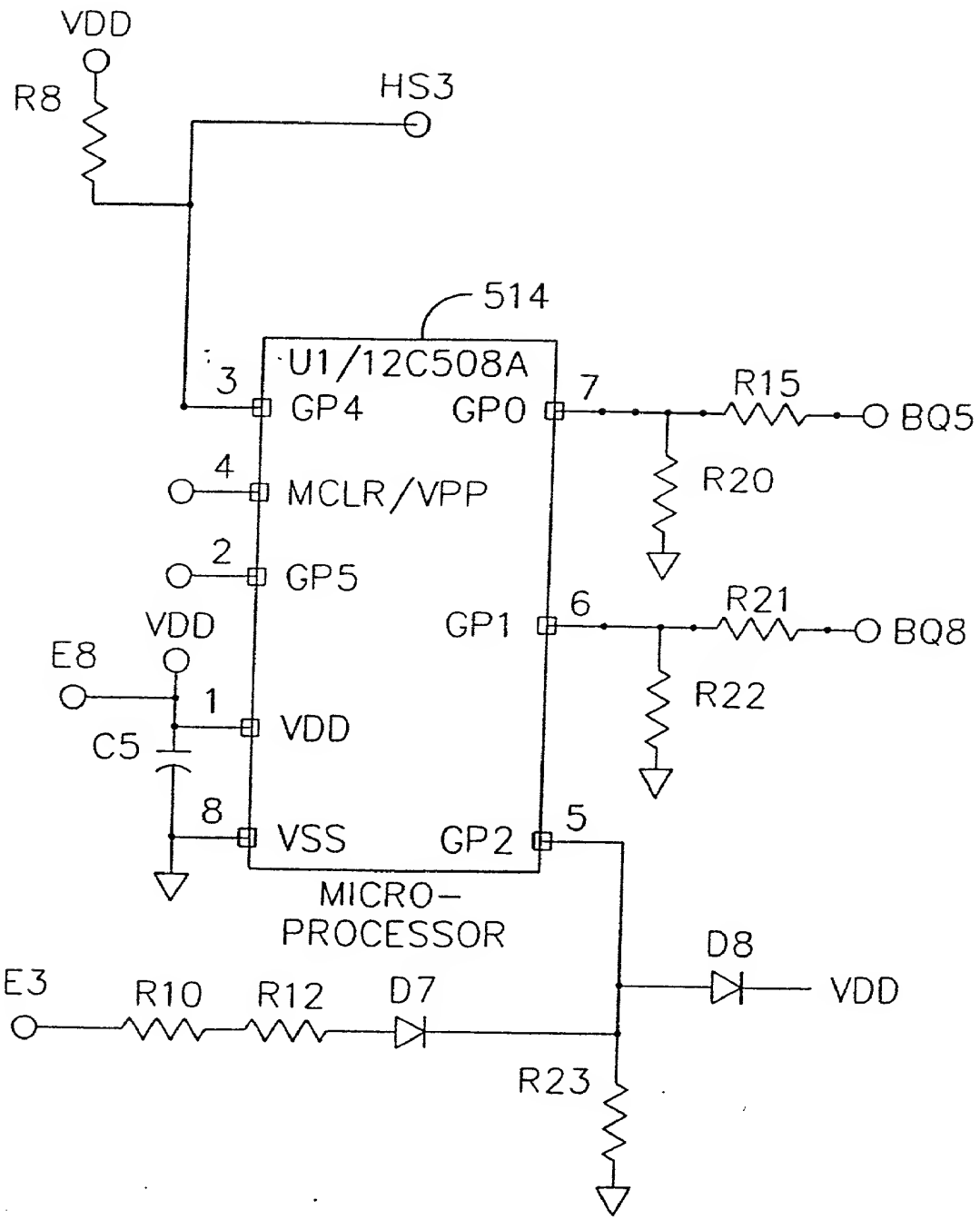
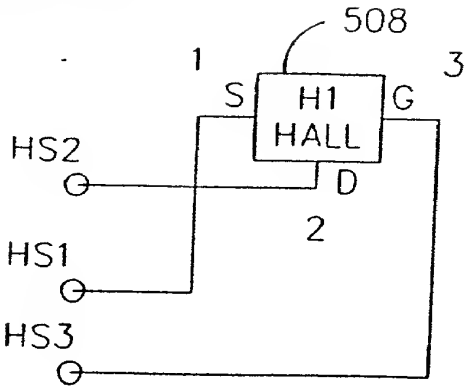

VDD
R8
HS3
514
U1/12C508A
3
GP4
GP0
7
R15
BQ5
4
MCLR/VPP
R20
2
GP5
VDD
E8
GP1
6
R21
BQ8
1
VDD
R22
C5
8
VSS
GP2
5
MICRO-
PROCESSOR
D8
E3
R10
R12
D7
VDD
R23

FIG. 24



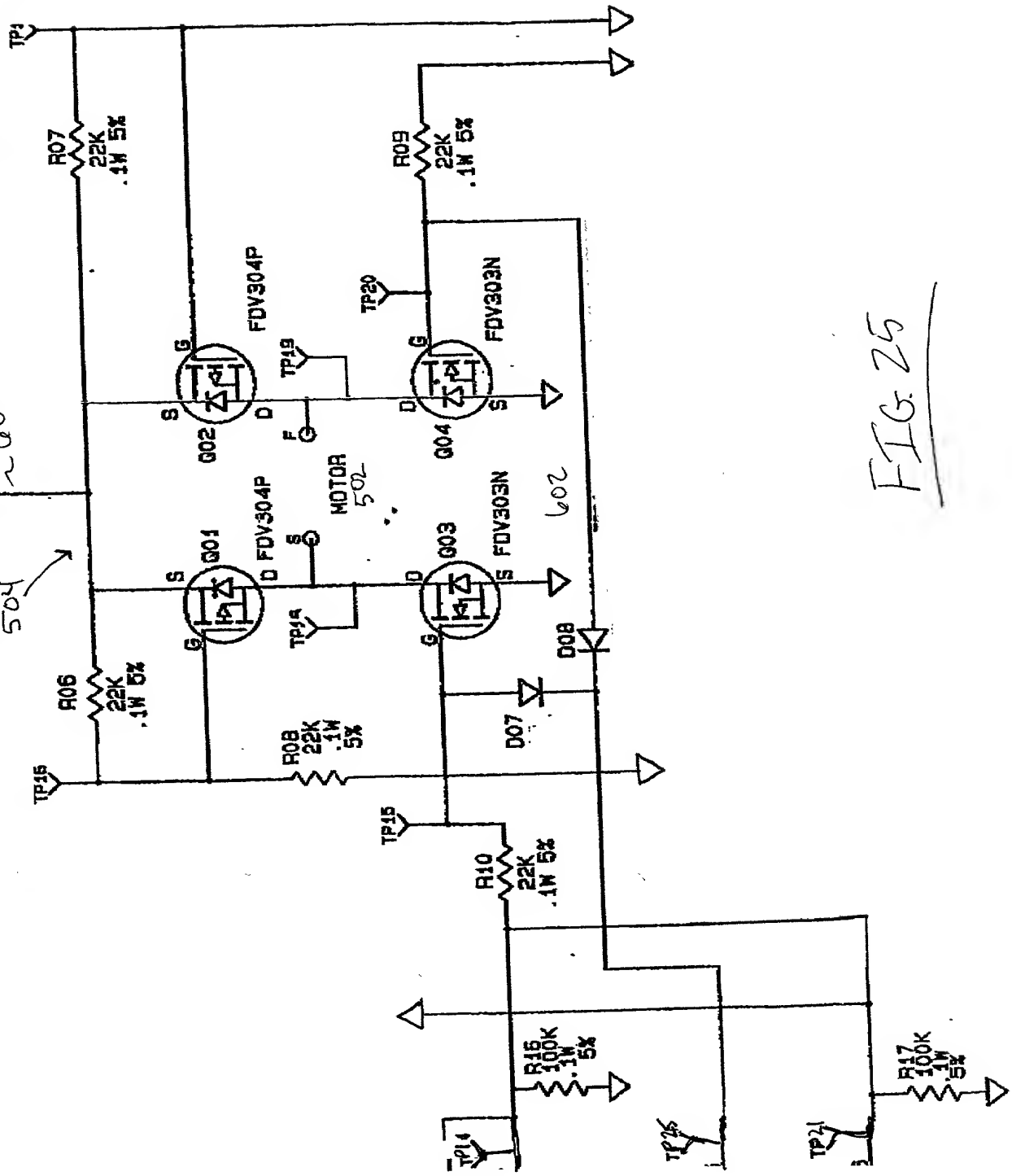

TP4
R07
22K
.1W 5%
R09
22K
.1W 5%
FDV304P
FDV303N
TP20
TP19
Q02
Q04
MOTOR
502
Q01
Q03
FDV304P
FDV303N
602
504
TP18
R06
22K
.1W 5%
R08
22K
.1W
5%
D08
D07
TP16
TP15
R10
22K
.1W 5%
R15
100K
.1W
5%
R17
100K
1W
5%
TP14
TP25
TP24

FIG 25

FIG. 26

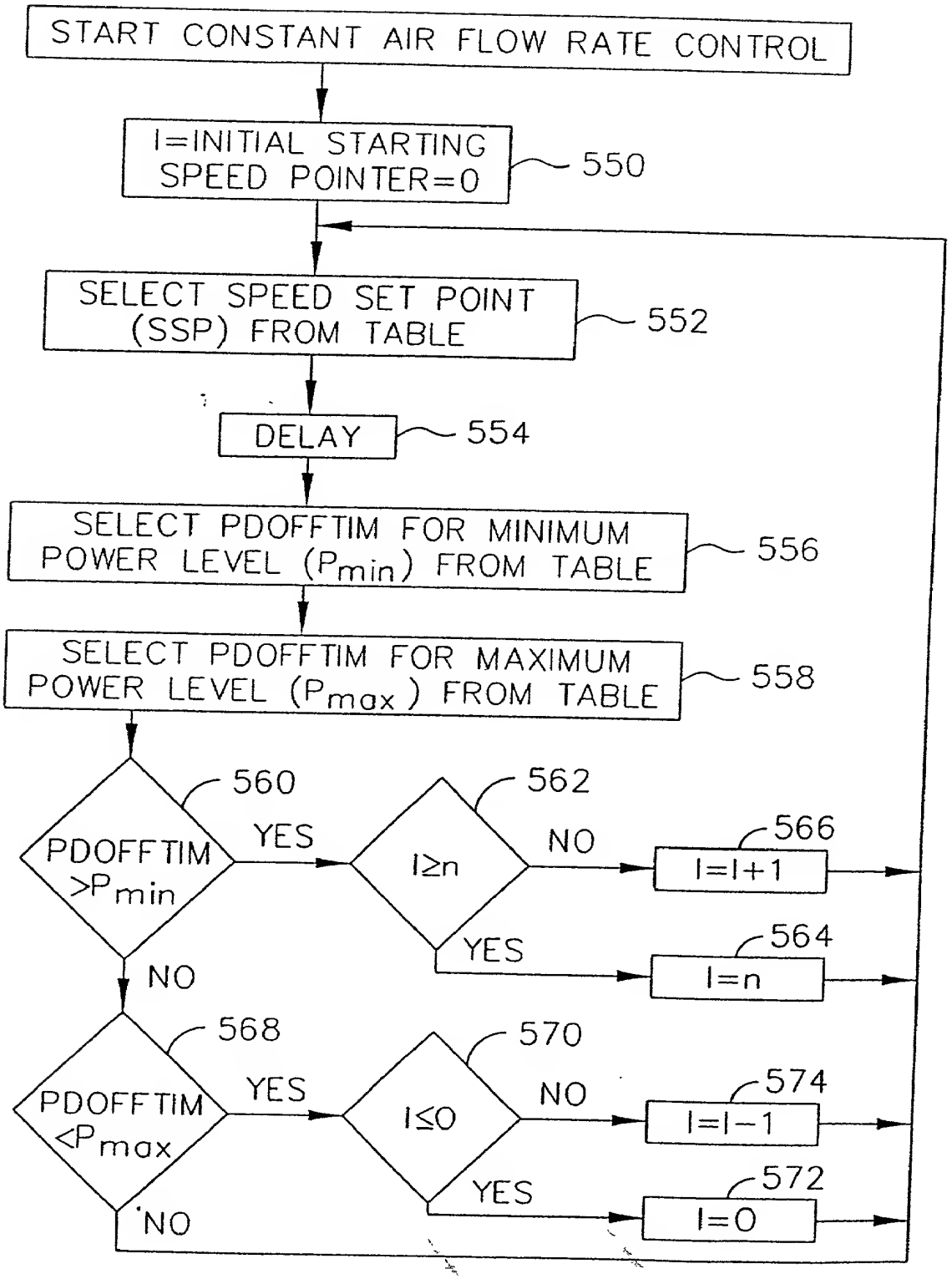
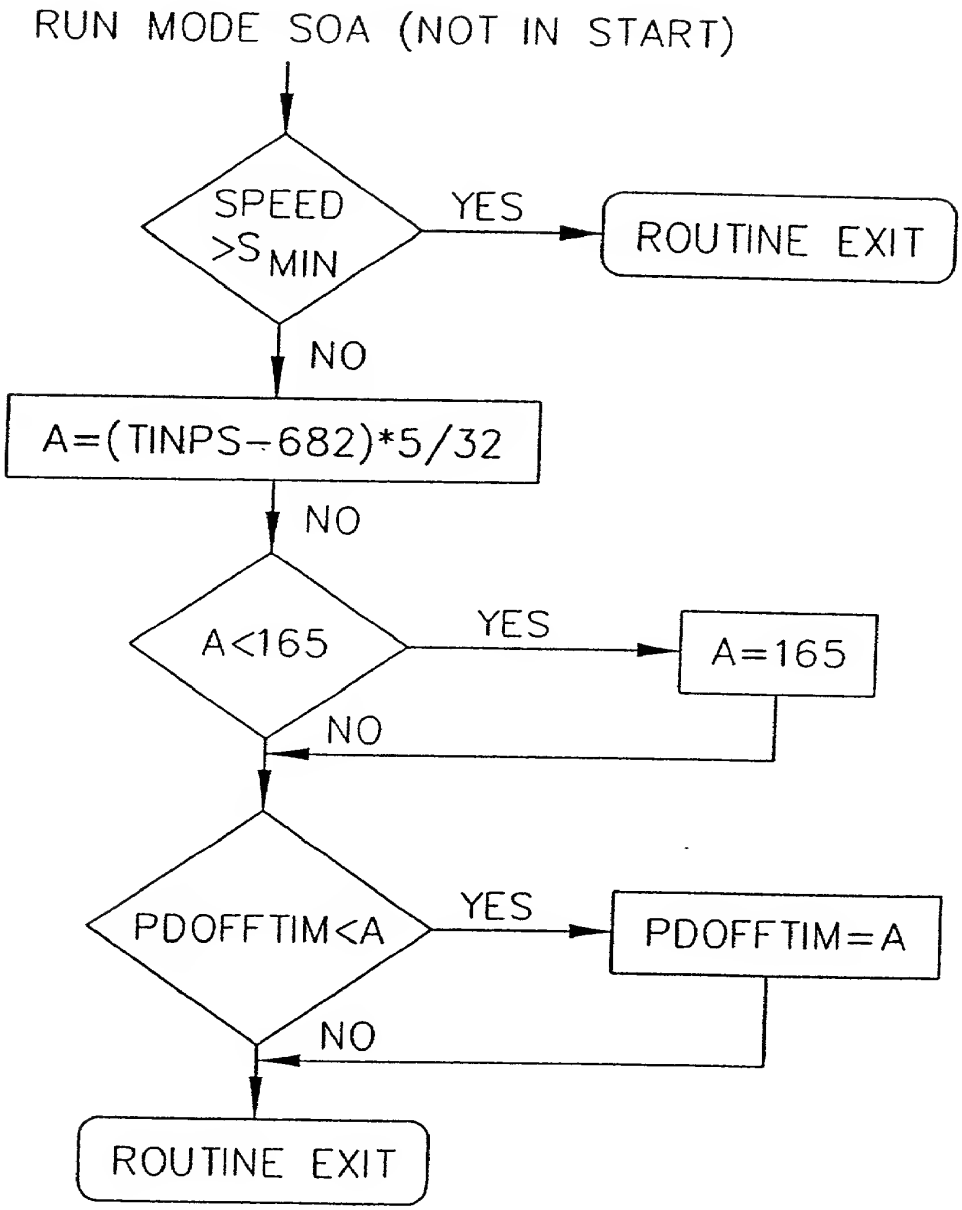

START CONSTANT AIR FLOW RATE CONTROL
I=INITIAL STARTING SPEED POINTER=0
550
SELECT SPEED SET POINT (SSP) FROM TABLE
552
DELAY
554
SELECT PDOFFTIM FOR MINIMUM POWER LEVEL (P_{min}) FROM TABLE
556
SELECT PDOFFTIM FOR MAXIMUM POWER LEVEL (P_{max}) FROM TABLE
558
560
PDOFFTIM >P_{min}
YES
562
I≥n
NO
566
I=I+1
YES
564
I=n
NO
568
PDOFFTIM <P_{max}
YES
570
I≤0
NO
574
I=I-1
YES
572
I=0
NO

FIG 27



*TINPS IS COMMUTATION PERIOD, 8μs PER BIT

Docket: 25th/6.5.5

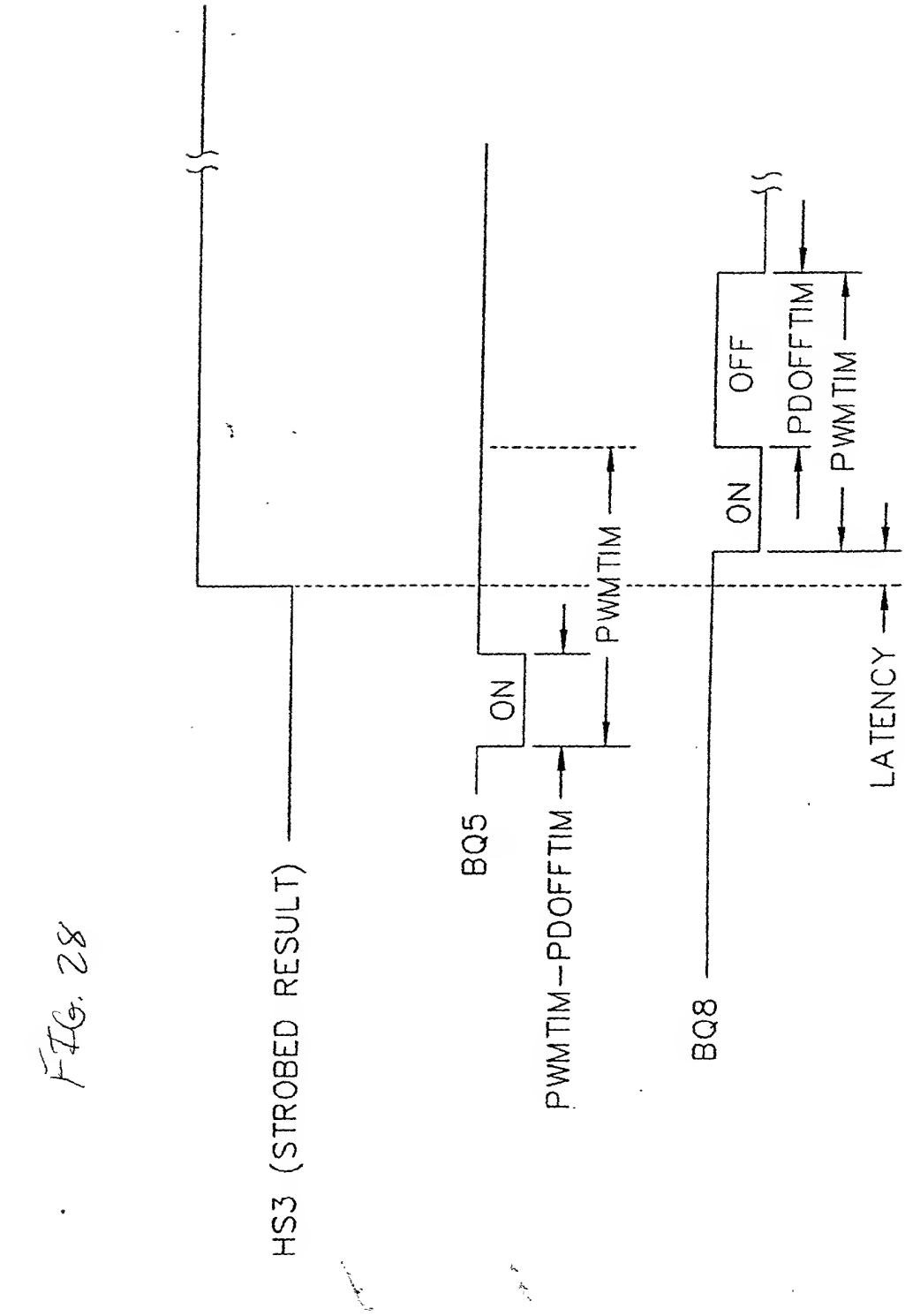
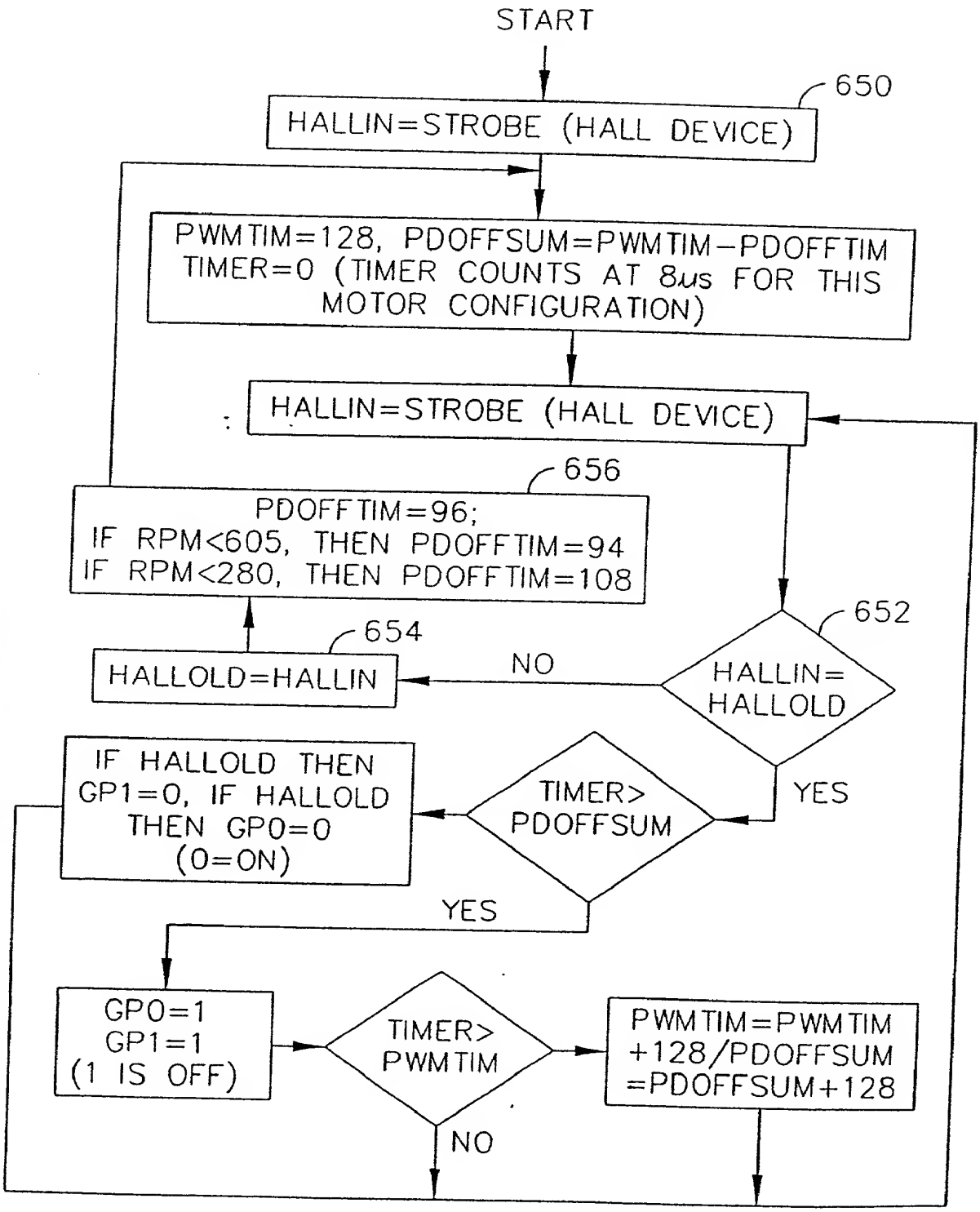

HS3 (STROBED RESULT)
BQ5
ON
PWMTIM–PDOFFTIM
PWMTIM
BQ8
ON
OFF
PDOFFTIM
PWMTIM
LATENCY

Fig. 28

FIG 29


START
650
HALLIN=STROBE (HALL DEVICE)
PWMTIM=128, PDOFFSUM=PWMTIM-PDOFFTIM
TIMER=0 (TIMER COUNTS AT 8μs FOR THIS MOTOR CONFIGURATION)
HALLIN=STROBE (HALL DEVICE)
656
PDOFFTIM=96;
IF RPM<605, THEN PDOFFTIM=94
IF RPM<280, THEN PDOFFTIM=108
652
HALLIN= HALLOLD
NO
654
HALLOLD=HALLIN
YES
TIMER> PDOFFSUM
IF HALLOLD THEN GP1=0, IF HALLOLD THEN GP0=0 (0=ON)
YES
GP0=1
GP1=1
(1 IS OFF)
TIMER> PWMTIM
PWMTIM=PWMTIM +128/PDOFFSUM =PDOFFSUM+128
NO

report 2857+360

FIG. 30

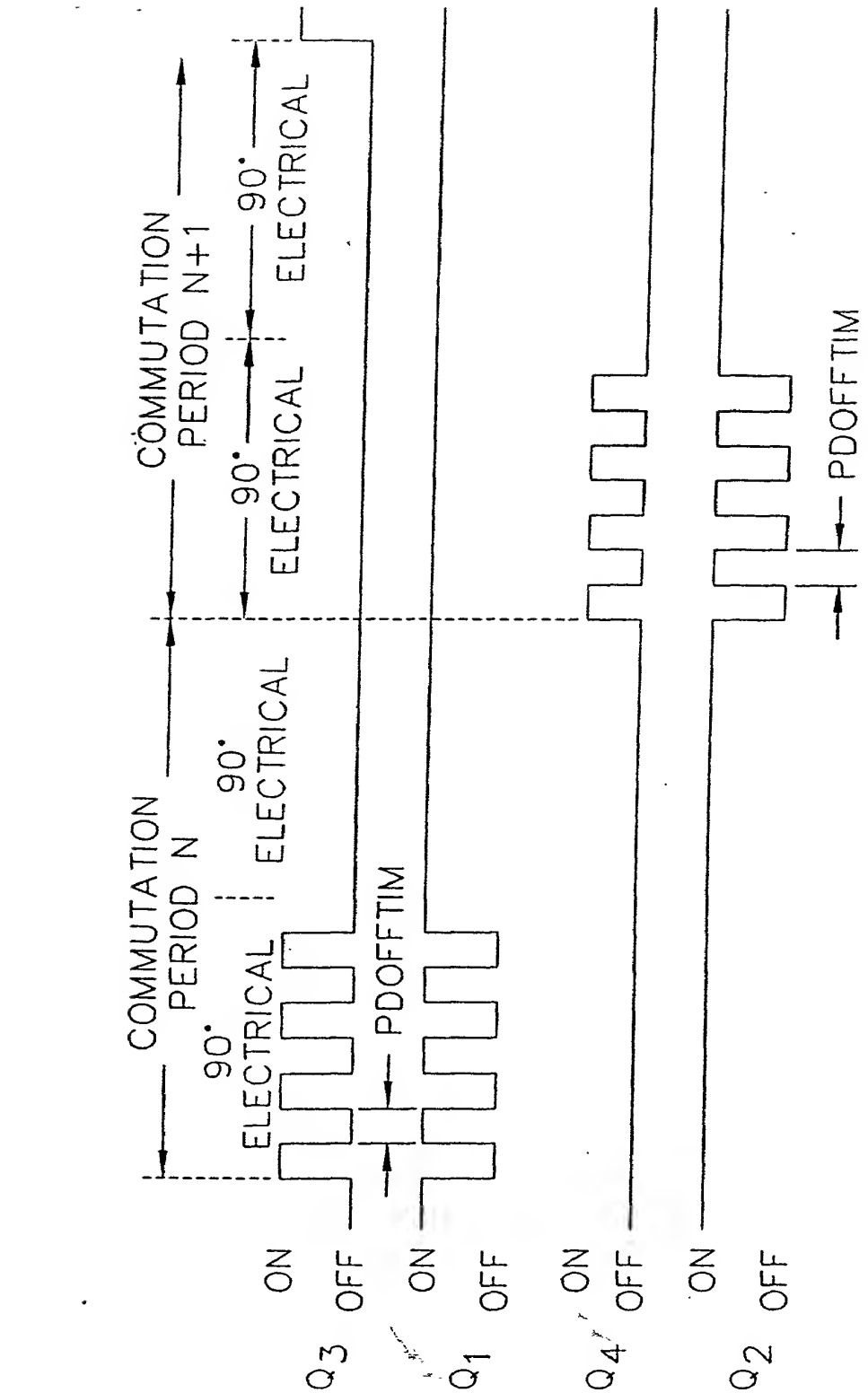
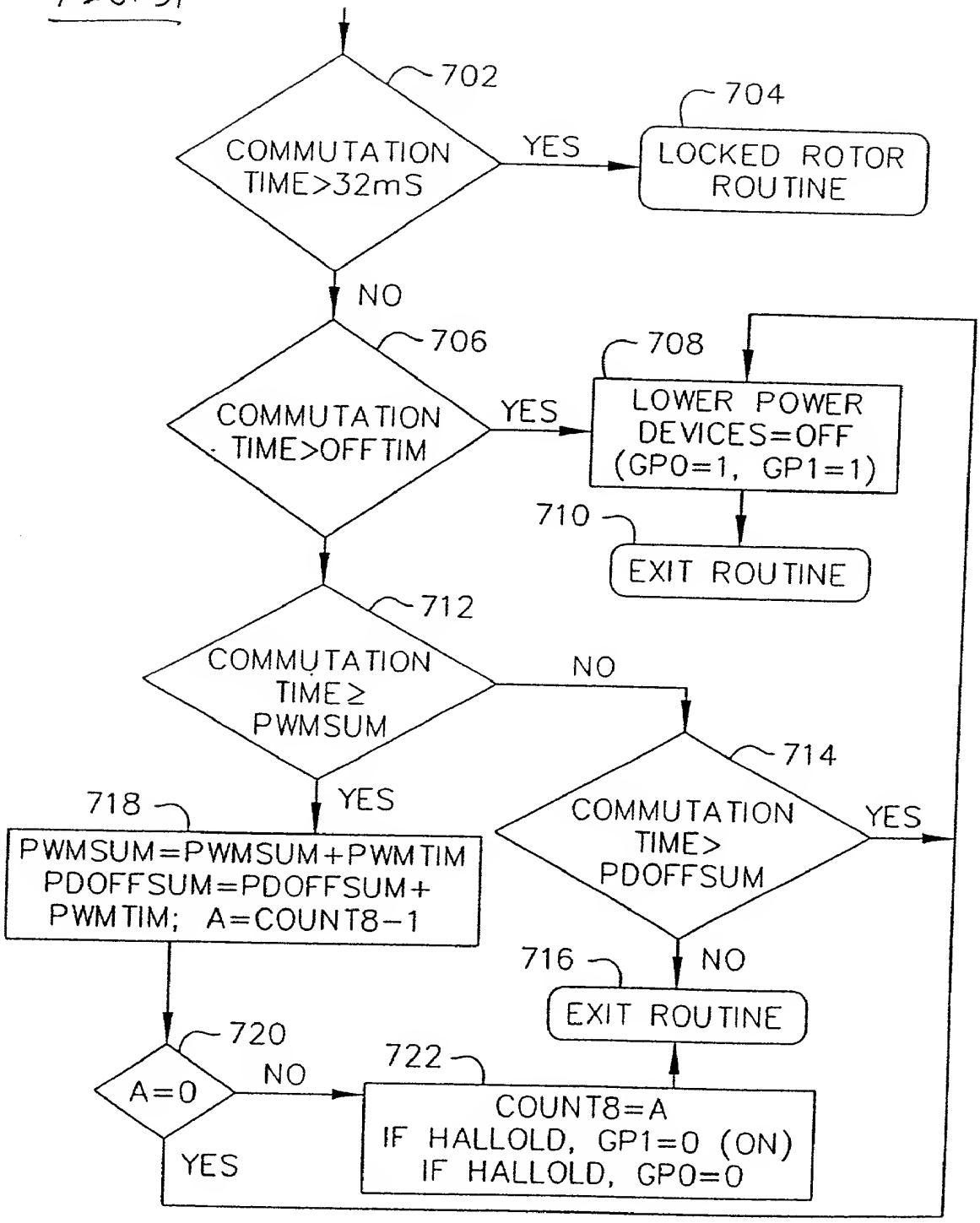


FIG. 31


702
COMMUTATION TIME>32mS
YES
704
LOCKED ROTOR ROUTINE
NO
706
COMMUTATION TIME>OFFTIM
YES
708
LOWER POWER DEVICES=OFF (GP0=1, GP1=1)
710
EXIT ROUTINE
712
COMMUTATION TIME≥ PWMSUM
NO
714
COMMUTATION TIME> PDOFFSUM
YES
NO
716
EXIT ROUTINE
718
PWMSUM=PWMSUM+PWMTIM PDOFFSUM=PDOFFSUM+ PWMTIM; A=COUNT8-1
YES
720
A=0
NO
YES
722
COUNT8=A
IF HALLOLD, GP1=0 (ON)
IF HALLOLD, GP0=0